August 19, 2003

Federal Communications Commission
Washington, D.C.

Subject: Docket 03-104 (Broadband over Power Line/Power Line Carrier)

Reply Comment

Dear Commissioners:

I am replying to the comments of the HomePlug Powerline Alliance because I feel that they best represent the general attitude and intent of BPL proponents.

Delivery of broadband data access to the general public is desirable and the Commission should support deployment of such technologies, but only where they are compatible with existing spectrum uses. The Commission has a difficult job in managing the introduction of new technology among an already-populated spectrum. That is why it is so important that the impact of the new technologies be adequately considered. In the matter of BPL, the potential for adverse effects - harmful interference - to existing users is clear and dramatic.

I will begin by presenting the fundamental and superior rule governing the operation of unlicensed devices as stated in FCC regulations section 15.5:

(a) Persons operating intentional or unintentional radiators shall not be deemed to have any vested or recognizable right to continued use of any given frequency by virtue of prior registration or certification of equipment, or, for power line carrier systems, on the basis of prior notification of use pursuant to Sec. 90.63(g) of this chapter.
(b) Operation of an intentional, unintentional, or incidental radiator is subject to the conditions that no harmful interference is caused and that interference must be accepted that may be caused by the operation of an authorized radio station, by another intentional or unintentional radiator, by industrial, scientific and medical (ISM) equipment, or by an incidental radiator.
(c) The operator of a radio frequency device shall be required to cease operating the device upon notification by a Commission representative that the device is causing harmful interference. Operation shall not resume until the condition causing the harmful interference has been corrected.

All other sections of the Part 15 rules are subordinate to this requirement. Harmful interference is absolutely forbidden, regardless of whether or not a device meets the radiation limits in subsequent sections.

In addition, the Commission rules recognize that the Part 15 radiation limitations alone are insufficient to guarantee that no harmful interference will be produced. From section 15.15:

(c) Parties responsible for equipment compliance should note that the limits specified in this part will not prevent harmful interference under all circumstances. Since the operators of part 15 devices are required to cease operation should harmful interference occur to authorized users of the radio frequency spectrum, the parties responsible for equipment compliance are encouraged to employ the minimum field strength necessary for communications, to provide greater attenuation of unwanted emissions than required by these regulations, and to advise the user as to how to resolve harmful interference problems (for example, see Sec. 15.105(b)).

Thus, any question about whether the limits on radiated emissions should be modified are, in fact, moot. Section 15.5 is clear in that harmful emissions caused by a device operating under Part 15 are forbidden, regardless of the actual level of the radiated emissions. Section 15.15 additionally states that compliance with the radiated emission limits does not guarantee freedom from harmful interference. Compliance with radiated emission limits has no bearing on the prohibition against harmful interference.

Let us then examine the comments in favor of BPL technology filed by the HomePlug Powerline Alliance. For example, in the paragraph under the heading "Additional Regulation of BPL Is Not Needed" it is claimed that:

"BPL devices are regulated as unlicensed carrier current systems under Part 15 of
the Commission's rules. Devices subject to Part 15 requirements have become
ubiquitous throughout our society and the emissions limits imposed under Part 15 have
proven effective at protecting against harmful interference. These limits have proved
useful at protecting sensitive licensed services throughout the spectrum even with the
extraordinary growth in the numbers of devices. The same limits govern emissions from
BPL systems and have proven to be adequate to protect against interference to licensed
services."

In rebuttal, the Part 15 regulations preventing harmful interference have only proven effective when they cause the device creating the interference to be disabled - this is supported by numerous instances in the Commission's own files. It is not the radiation limits that have proven to be the effective regulation. In fact, the radiation limits have proven to be too generous when the devices are connected to cables and power lines that act as antennas. The only effective regulation of interference stems from the fundamental requirement of section 15.5 that a device causing harmful interference must cease operations.

Under the heading, "Regulation Should Address Interference Potential, Not Technology" the comments state:

" Licensed spectral users clearly hold a legitimate expectation to protection from
harmful interference. Regulation of BPL should focus on addressing interference
potential rather than unnecessarily strict technology mandates that may limit future
opportunities for technical innovation."

The Commission's rules already address interference potential in Part 15.5. If harmful interference results from the operation of the Part 15 device, then it must cease operating, regardless of its actual level of radiated emissions. Extensive and documented studies in Europe and Japan demonstrate clearly that interference potential is severe and inevitable. There should be no doubt on that point.

Under the heading, " Measurement Procedures" the HomePlug comments make the claim:

" HomePlug devices are now active in thousands of homes with no reports of harmful interference."

This is simply not true - detailed filings and references to field studies have been presented to the Commission that show BPL technology causes dramatic and disabling interference levels even in limited deployment with careful professional installation.

Furthermore, the HF spectrum is already grossly polluted by Part 15 devices that are simply too numerous for HF users - government and public safety agencies, amateurs, short-wave listeners, marine - to deal with. The numerous complaints that the Commission has received regarding Part 15 devices indicates but a tiny fraction of the actual situation which grows worse every day. The public is completely unaware of their obligations under Part 15.5. To expect BPL users to be able to deal with interference issues is wildly unrealistic and will only create a tremendous complaint and enforcement problem for the Commission.

In addition, the power utilities that will be the primary agencies for installation and maintenance of BPL have a poor record of compliance with Part 15 rules. The Commission's files document numerous cases of utility-caused interference to other HF spectrum users that was only grudgingly addressed, often requiring a reminder from the Commission's Enforcement Division. The utilities are not equipped to deal with the interference that BPL will cause, nor, apparently, are they inclined to become so.

In the same section, HomePlug states, " BPL systems operate like other digital devices in that they use wires as a transmission medium for signals, and the unshielded and variable nature of these wires provides an opportunity for these wires to potentially radiate. As such, BPLmanufacturers have shouldered the burden of conducting tests in actual field environments pursuant to the FCC's requirements in Part 15 to ensure that their devices meet emissions level requirements."

The obvious rebuttal is two-fold. First, the filings and referenced studies show that radiation is not " potential" . It is strong and widespread. Second, compliance with radiated emission levels has no bearing on whether harmful interference will be caused and does not provide any immunity against the prohibition on harmful interference by Part 15.5. The tests conducted thus far show clearly that devices in full compliance with the existing radiated emission limits cause severe harmful interference over a wide spectrum.

In the concluding section of the comments, it is stated:

" No need has been demonstrated that the Commission should now change its rules governing In-House BPL devices. Therefore the Commission should decline further rulemaking at this time."

In this I am in agreement. The Commission's rules are clear - no harmful interference is permitted. None. Not some, not under certain circumstances, not in certain frequency bands. None. The results of field tests are absolutely clear and unanimous in that BPL devices will inevitably radiate to a degree that harmful interference will be the result to nearly every user of the spectrum in which its deployment is proposed.

There are many other technologies that can deliver broadband access to the public without the severe and immediate consequences to licensed spectrum users that are inevitable in BPL. By directing broadband public data access to those technologies the Commission will not only be satisfying its mandate to protect licensed user, but will foster innovation.

The Commission must stand up for its own rules and licensed users, recognizing the technical realities of this technology. I urge the Commission to reject BPL technology deployment.

Respectfully,

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